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WEEKLY OVERSIGHT REPORT

CH2MHILL

Weekly Summary Report

USEPA Oversight, Sauget Area 1, Sauget, IL

WA No. 239-RSBD-054V / Contract No. 68-W6-0025

Week Ending Friday, September 24, 2004

This report summarizes the Remedial Investigation/Feasibility Study (RI/FS) fieldwork conducted by Monsanto, Solutia, and their contractors from September 21, 2004 through September 24, 2004 at Sauget Area 1 Sites. The current RI/FS work consists of a dense non-aqueous phase liquid (DNAPL) Characterization and Remediation Study. CH2M HILL provided field oversight on four days during the week.

Contractors Onsite

- Golder Associates (consultant for Monsanto/Solutia)
- Groundwater Services Inc. (consultant/contractor to Monsanto/Solutia for the DNAPL Characterization and Remediation Study)
- Philip Environmental (IDW Services subcontractor to Groundwater Services Inc.)
- Prosonic Corporation (drilling subcontractor to Groundwater Services Inc.)

Work Performed This Week

Groundwater Services Inc. (GSI) and Prosonic Corporation (Prosonic) were onsite during the week conducting work for Task 4 of the DNAPL Characterization and Remediation Study Work Plan (GSI, April 2004), Soil Sampling and Installation of Piezometers. Golder Associates (Golder) was onsite during the week managing fieldwork on behalf of Monsanto/Solutia. During the week, two soil borings were drilled and bedrock piezometers were installed.

Soil Boring / Installation of Piezometers

Prosonic drilled soil borings and installed piezometers into bedrock cores at two locations during the week. The work was conducted under the direction of GSI on behalf of Solutia/Monsanto.

Soil borings were drilled and piezometers installed at the following locations during the week:

- A1-8 at Site I
- A1-18 at Site G

Prosonic used sonic technology to drill the soil borings at Sauget Area 1. A 4-inch core barrel was utilized to advance the boring and collect samples. Subsequently, a 6-inch override casing was advanced to support the borehole. Additionally, a 7-inch override casing was used in the waste/fill areas to isolate the waste. Boreholes were drilled five feet into competent bedrock and continuously screened for the presence of non-aqueous phase liquid (NAPL).

Soil Logging and Field DNAPL Screening Tests

Soils were logged, continuously sampled and tested during drilling operations. Each 10-foot core was examined using the following field measures:

- Visual and olfactory observations to log soil and geologic conditions and to visually screen for the presence of NAPL
- Head-space analysis of each 2½-foot interval of core using a Photoionization Detector (PID) to screen for organic vapors
- Sudan dye soil testing vials, which will indicate the presence of oil in the tested volume of soil
- FLUTe™ strips, a dye-impregnated colored ribbon, directly applied to the soil core, which visually indicates the presence of NAPL

The field screening results and observations are summarized in Table 1.

Boring A1-8, located at Site I, was the most impacted boring observed thus far during the ongoing piezometer installation effort at Area 1. Visual evidence of oil was observed in the soil. In this boring, a film, beading residue, or sheen was noted at some depth intervals. Coupled with the Sudan dye tests and PID measurements, the information gathered in the field indicates that residual DNAPL may be present in the soil and sand matrix at this location.

Boring A1-18, located on the west of Site G, encountered a small amount of waste between approximately 5 and 15 feet below ground surface (bgs). The waste included wood debris and rubber fragments.

Soil Sampling

GSI collected one soil sample from each 10-foot interval of soil core to be submitted for laboratory analysis of volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and total organic carbon (TOC). Each 10-foot soil core was sectioned into 2½-foot intervals, with criteria aimed to select the interval for analyses based on the results of the field screening, with preference to more potentially impacted intervals. Chemical analyses of soil samples will be conducted by Severn Trent Laboratories in Savannah, Georgia.

Additionally, three to four relatively undisturbed samples were collected from each boring using a split-spoon sampler and brass liners to contain the sample. The samples were frozen on dry ice and wrapped in plastic for storage. Three relatively undisturbed samples from each borehole, representing the shallow, middle, and deep-hydrogeologic units (SHU, MHU, and DHU) will be analyzed for physical properties including porosity, bulk density, and grain size. For each fill area, one relatively undisturbed sample from each of the waste interval, shallow, middle, and deep-hydrogeologic units will have DNAPL mobility tested. Additionally, three to four samples from each site will be analyzed for pore fluid saturation using the Dean-Stark procedure. The chemical and physical properties analysis of all split spoon samples will be conducted by PTS Laboratories in California. The specific analyses conducted on each of the split spoon samples will be determined following a review of the chemical analysis results of the soil samples.

Piezometer Installation

Two piezometers were installed during week at A1-8 and A1-18. The piezometers were constructed to expose the screen to the bedrock core and the interval directly above bedrock in the DHU. Each boring was drilled approximately five feet into rock and the well was screened for 15 feet above total depth. Piezometers were constructed using 2-inch diameter stainless steel screen with a 0.010-inch aperture and 2-inch diameter stainless steel riser.

TABLE 1

Field Screening Tests and Soil Boring/Piezometer Installation Summary
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ID	Site	Date Installed	Approx. Bedrock Depth	Screen Interval	Significant Observations	Odor	FLUTE™ Strip Tests	Sudan Dye Tests	Significant PID Readings
A1-3	Site H	Sept. 10	100'	100-115'	None	None to slight	All negative	All negative	331 ppm within waste at 8-10'
A1-2	Site H	Sept. 12	107'	98-113'	None	None to strong odor	All negative	3 positive results (either few red droplets or staining in jar) at 58-60', 63-65', and 68-70'	538 ppm within waste at 8-10' 50-52': 471 ppm, 58-60': 233 ppm
A1-16 (Location near existing LNAPL well, EE-11)	Site G	Sept. 14	116'	106-121'	Black staining at ~27'	Odor within waste, slight odor up to 70'	All negative	4 positive results (either few red droplets or staining in jar) within waste at 3-5', and 8-15'	Readings between 50-100 ppm at 28-30, 43-45', and 63-65'
A1-11	Site I	Sept. 15	116'	106-121'	None	None	All negative	1 positive result (red specks, adhered to sediment particles) at 103-105'	None
A1-8	Site I	Sept. 23	111'	102-119'	Oily film at some intervals. A sheen and/or dark brown to black droplets of oily residue visible in some intervals.	Odor observed throughout borehole	All negative	31 of 38 tests (81%) positively indicated oil in soil, (red film/droplets/stain or pink colored ball). Notably – between 0-10' (surface) and 107.5-111' (two intervals above bedrock) the results were negative.	Max. result (957 ppm) at 5-7.5' interval. 36 of 39 tests (92%) were >100 ppm. Notably – two intervals near total depth (105-110') had slightly lower results (61 and 67 ppm)
A1-18	Site G	Sept. 24	115'	106-121'	None	Slight odor observed between 5-65'.	All negative	6 of 33 tests (18%) were positive. Results were marginally positive (slight pink color on ball).	Max. result (295 ppm) within waste at 7.5-10'. 11 of 42 results were >50 ppm, all between 5-45'.

Notes:

All depths are in feet below ground surface

Piezometer construction proceeded by pouring sand directly into the borehole annulus around the well screen. Sand was poured to a depth approximately 2 feet above the top of the well screen, followed by a bentonite chip seal of at least 3 feet in thickness. The 6-inch override casing was retracted from the borehole as the filter pack and bentonite seal were placed. A cement-bentonite grout was used to fill the borehole annulus from the top of the bentonite seal to ground surface.

During the week, Philip Environmental placed concrete jersey barriers around the piezometers after installation to provide permanent guards from damage at each location.

Investigation-Derived Waste (IDW)

Solid IDW from each borehole was placed in 55-gallon drums, with soil cuttings from waste intervals placed in separate drums. Phillip Environmental transported IDW drums to the Judith Lane field facility, where solid IDW from the 'non-waste' intervals was transferred into a roll-off box. IDW from the waste intervals will be characterized separately. Liquid IDW was collected at each borehole and transferred to a 'frac-tank' located at the Judith Lane facility.

Health and Safety

Initial drilling at each borehole location within a waste/fill area commenced with all personnel donning Level C Personal Protective Equipment (PPE) including respirator and Tyvek® chemical retardant suits. An exclusion zone was established around the drill rig and sampling area within which Level C PPE was required. Drilling at boring A1-8 at Site I proceeded to total depth with personnel donning Level C PPE.

The breathing zone was frequently monitored using a calibrated PID to check organic vapor concentrations throughout drilling operations. Additionally, a large fan was utilized to ventilate the drilling platform as an engineering control to minimize potential organic vapors in the breathing zone.

NAPL Survey

On September 21, 2004, GSI conducted a NAPL survey of the piezometers installed during the previous field mobilization, specifically A1-2 and A1-3 at Site H, A-16 at Site G, and A1-11 at Site I.

The NAPL survey at these wells consisted of the following measurements:

- A PID measured for the presence of organic vapors as the well cap was removed
- A water level indicator was used to measure the depth to water at each piezometer
- A Teflon bailer was lowered into the top of water present in the well, and the bailer was visually observed for presence of sheen or LNAPL
- A weighted cotton string was dropped to the base of each well, then observed for potential presence of staining on the string
- A Teflon bailer lowered to the total depth of the well, bailer was visually observed for presence of sheen or DNAPL

At each of the four piezometers, none of the above measurements indicated any potential presence of NAPL. Specifically, no elevated PID measurements, staining, or visible sheen was observed in any of the tests.

Work Anticipated Next Week

Prosonic and GSI will continue field activities over the weekend of September 25-26, and through the work week until Thursday, September 30, 2004. Drilling will continue at locations A1-4 at Site L and A1-7 at Site I over the weekend. Additionally, GSI is scheduled to perform a NAPL survey on newly installed piezometers next week. The current schedule from GSI estimates that Task 4 fieldwork will be completed on October 14.

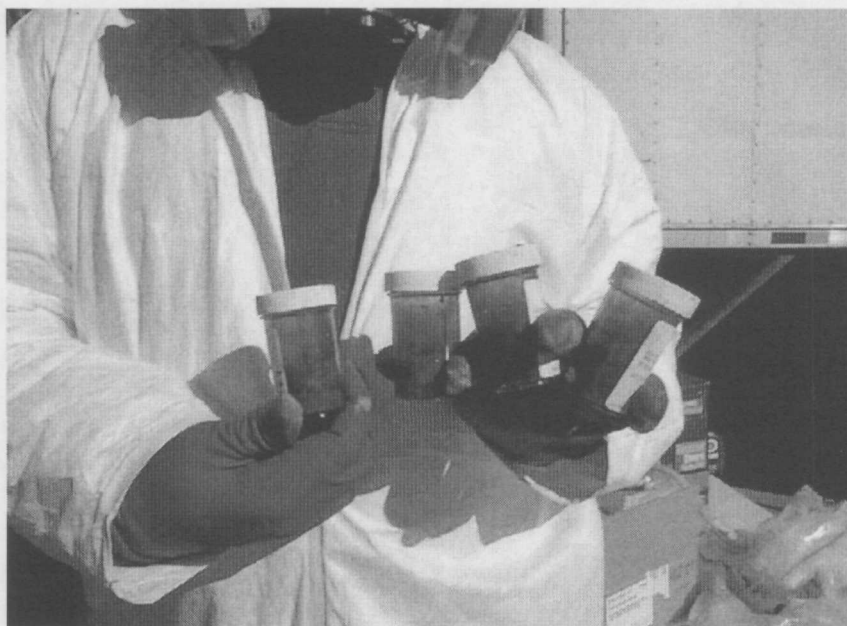
Photos from September 21, through September 24, 2004:



Drilling and collecting samples at A1-8, Site I, proceeded to total depth in Level C PPE (September 22, 2004).



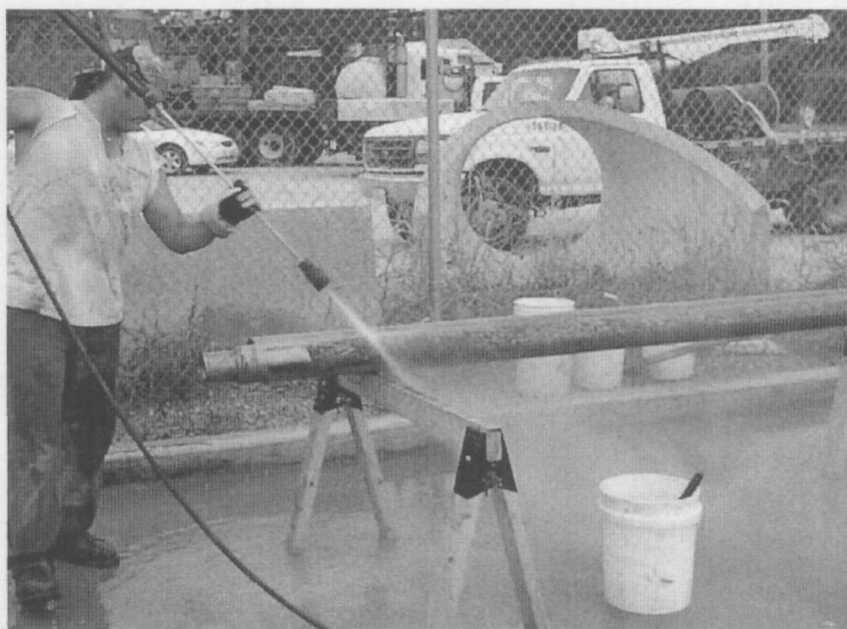
Black or dark brown staining or oily residue was observed in some core samples and on the plastic sleeve at borehole A1-8, Site I (September 22, 2004).



The majority of Sudan dye tests were positive for 'oil in soil' at borehole A1-8, Site I (red or pink coloration in the vial indicates a positive result) (September 22, 2004).



The top of rock interval at borehole A1-8, Site I, did not contain visual indications of oil (September 22, 2004).



Decontaminating drilling equipment at the Judith Lane facility (September 23, 2004).



Drilling at A1-18 on Wiese property, Site G (September 24, 2004).